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GOVERNMENT OF THE PROVINCE OF ALBERTA

ANNUAL REPORT

OF THE

THE ALBERTA POWER COMMISSION

For the Year Ending

DECEMBER 31, 1953

EDMONTON

J. G. MacGREGOR

CHAIRMAN

January 31st, 1954.

The Honorable N. A. Willmore,
Minister of Industries and Labour,
Administration Building,
Edmonton, Alberta.

Sir:

I have the honor to submit herewith the Annual Report of the Alberta Power Commission for the calendar year ended December 31st, 1953.

An audited statement of receipts and disbursements of the Alberta Power Commission will be sent under separate cover.

Respectfully submitted,

ALBERTA POWER COMMISSION

J. G. MacGregor,
Chairman.

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ALBERTA POWER COMMISSION

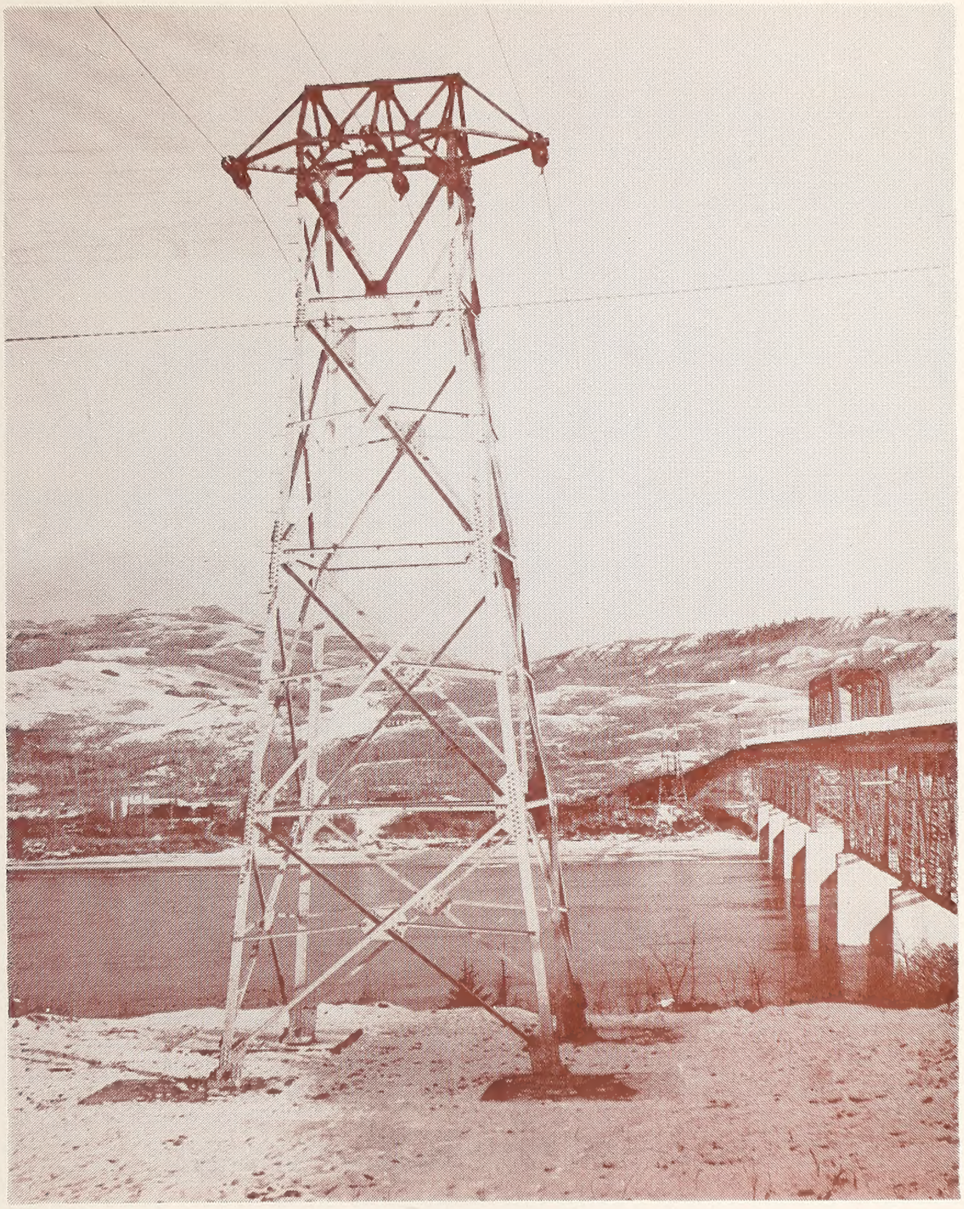
1953

J. G. MacGregor,
Chairman

W. J. Dick,
Member

J. E. Oberholtzer,
Member

J. L. Reid,
Member and Secretary



Northland Utilities Limited River Crossing
at Peace River

ALBERTA POWER COMMISSION

ANNUAL REPORT

For Year Ending December 31st, 1953.

The Alberta Power Commission is not an operating Commission; that is, it does not own or operate any power plants, transmission lines or distribution systems. In this respect it is different from the Power Commissions in all the other Provinces, except Prince Edward Island and Newfoundland. Keeping this in mind, it might be well to consider the duties and the responsibilities of the Power Commission. Its duties at present, under the Power Commission Act, are only those of a regulatory or supervisory nature. These duties are largely covered by Section 6 of the Power Commission Act, which is as follows:

Whenever required so to do by the Lieutenant Governor in Council the Commission shall inquire into, examine and investigate, -

(a) water powers and water privileges in Alberta, their value and capacity;

(b) the existing facilities for the manufacture and distribution of power in Alberta;

(c) such other matters relating to power and its distribution in Alberta as the Lieutenant Governor in Council from time to time may require;

and shall report thereon to the Lieutenant Governor in Council.

The Commission feels that its principal duties at the present

time are three fold.

1. The collection of statistics in connection with the Central Station Industry in the Province, and the study of these statistics so that the people of the Province will have a true picture of the industry.
2. The study of hydro-electric power sites and other power possibilities in the Province. During the past year this study has taken the form of a continuation of studies which were under way in previous years in connection with hydro-electric possibilities on the Athabasca River. This will be covered in greater detail later.
3. Farm Electrification: This is the phase of its work to which the Commission has devoted most of its time. As the number of electrified farms increases the problems of farm electrification become more complex. Surveys of farming areas of the Province become necessary to ensure that the lines are built in the most economical manner possible and in a manner that will make available the comforts of farm electrification in even the most remote areas.

During the year the Commission held eleven formal meetings at which the problems outlined above were discussed. In addition to these the Commission paid a formal visit to the Mayerthorpe Edson, Jasper area to examine the conditions of electrical services in that part of the Province.

The Commission has recently suffered a great loss in the death of The Honourable J. L. Robinson, Minister of Industries and Labour.

He devoted a great deal of time to the question of power supply and was intensely interested in the question of completing the electrification of the farms in the Province. He was a conscientious and indefatigable worker and his guidance on these problems will be sorely missed.

The Power Survey which was completed during 1952 contained a number of statistics on the Alberta Central Station Industry. These statistics made it possible to compare the progress made in Alberta with that in the other parts of Canada. It appears advisable to continue the tabulation of these statistics so as to bring them up to date from year to year. Tables No. 1 to 8 which follow provide this information.

Table No. 1 shows the capacity in H. P. for the Central Electric Stations in Canada for the past 10 years:

TABLE NO. 1

Capacity of Central Electric Stations H. P.

Year	Alberta	Canada	Saskatchewan	Manitoba
1943	177,366	9,602,794	168,668	512,717
1944	197,995	9,713,791	168,966	511,814
1945	205,837	9,666,987	169,253	511,814
1946	198,189	9,825,459	170,328	534,843
1947	211,598	9,601,157	** 263,609	** 444,488
1948	221,762	10,038,541	292,652	469,202
1949	276,826	10,637,798	311,186	469,042
1950	278,396	11,703,161	313,125	596,482
1951	* 393,000	12,781,610	363,871	596,615
1952	* 406,000	14,306,000	* 413,000	* 674,000
1953	* 485,000			

* Figures marked thus are Alberta Power Commission figures, the others are from the Dominion Bureau of Statistics.

** One station formerly counted in Manitoba transferred to Saskatchewan.

Increase during the 10 year Period ended 1952.

Year	Alberta	Canada	Saskatchewan***	Manitoba ***
1952	406,000	14,306,000	413,000	674,000
1943	177,366	9,602,794	258,688	422,727
Increase:	228,634	4,703,206	154,312	251,273
Percent Increase:	129%	49%	60%	59%

Increase Alberta 1944 to 1953 - 143%

*** These figures for Saskatchewan and Manitoba have been corrected to take account of the fact that one station formerly counted as in Manitoba was transferred to Saskatchewan's total in 1947.

Table No. 2 shows the growth of K. W. H. generated net during the past ten years:

TABLE NO. 2

Electric Energy Generated by Central Electric Stations
(Millions of K. W. H.)

Year	Alberta	Canada	Saskatchewan	Manitoba
1943	513	40,479	232	2,224
1944	555	40,599	244	2,233
1945	567	40,130	250	2,234
1946	602	41,736	271	2,339
1947	641	43,424	** 763	** 2,032
1948	724	42,390	805	2,056
1949	801	44,419	858	2,160
1950	901	50,902	898	2,452
1951	* 1,055	57,400	974	2,562
1952	* 1,213	61,786	1,074	2,696
1953	1,341			

* Figures marked thus are Alberta Power Commission figures, the others are from the Dominion Bureau of Statistics.

** One station formerly counted as in Manitoba now treated as being in Saskatchewan.

Increase during the 10 year period ended 1952

Year	Alberta	Canada	Saskatchewan***	Manitoba***
1952	1,213	61,786	1,074	2,696
1943	513	40,479	632	1,624
Increase:	700	21,307	242	1,072
Percent Increase:	137%	53%	38%	66%

Increase Alberta 1944 to 1953 141%

*** These figures for Saskatchewan and Manitoba have been corrected to take account of the fact that one station formerly counted as in Manitoba was transferred to Saskatchewan's total in 1947.

TABLE NO. 3

Annual K. W. H. used per Domestic Customer

Year	Alberta	Canada	Saskatchewan	Manitoba
1942	656	1,506	866	4,062
1943	670	1,535	883	4,226
1944	698	1,598	908	4,234
1945	735	1,693	953	4,399
1946	819	1,844	1,018	4,433
1947	882	1,951	1,034	4,304
1948	989	2,078	1,115	4,628
1949	1,073	2,168	1,199	4,694
1950	1,224	2,413	1,353	4,783
1951	1,384	2,617	1,531	4,813

These are Dominion Bureau of Statistics figures and the 1952 figures are not available yet.

Increase during the 10 year period ended 1951

Year	Alberta	Canada	Saskatchewan	Manitoba
1951	1,384	2,617	1,531	4,813
1942	656	1,506	866	4,062
Increase:	728	1,111	665	751
Percent Increase:	111%	74%	77%	19%

Manitoba has an exceptionally high figure for K. W. H. s used per domestic customer. This is partly due to the fact that one city alone Winnipeg - contains a large percentage of the total population of the province. It is also due to the fact that the cost of developing the water power sites adjacent to Winnipeg was possibly the cheapest in the world. This provided cheap power for the people of the City of Winnipeg, and since fuel was expensive there, electricity was used extensively for cooking and heating and a happy combination of low rates produced high use, and vice versa.

The figure for Canada for K. W. H. used per year per domestic customer is high because it takes into account the high consumption in Manitoba, and in Ontario.

It will be noted also that Saskatchewan's consumption is higher than that in Alberta. This is largely due to the fact that all cities in Alberta, and many of the smaller centres, use natural gas for cooking and water heating, whereas there is scarcely any gas available in Saskatchewan, and the consumers there tend to use electricity for these purposes.

TABLE NO. 4

Cost in Cents per K. W. H. Domestic Customers Only

Year	Alberta	Canada	Saskatchewan	Manitoba
1942	4.87	1.87	4.64	1.00
1943	4.83	1.80	4.61	0.99
1944	4.74	1.75	4.55	0.99
1945	4.59	1.66	4.39	1.02
1946	4.18	1.62	4.29	1.02
1947	3.93	1.60	4.27	1.08
1948	3.72	1.60	4.09	1.06
1949	3.54	1.59	3.95	1.11
1950	3.28	1.61	3.80	1.15
1951	3.16	1.65	3.70	1.18

These are Dominion Bureau of Statistics figures and the 1952 figures are not yet available.

Decrease during the 10 year period ending 1951

Year	Alberta	Canada	Saskatchewan	Manitoba
1942	4.87	1.87	4.64	1.00
1951	3.16	1.65	3.70	1.18
Decrease:	1.71	0.22	0.94	Increase: .18
Percent Decrease:	35%	12%	25%	Increase: 18%

TABLE NO. 5

Total Number of Customers of Central Electric Stations

(Thousands)

Year	Alberta	Canada	Saskatchewan	Manitoba
1942	98	2,125	73	113
1943	101	2,169	74	114
1944	105	2,238	77	118
1945	112	2,333	82	121
1946	121	2,477	90	131
1947	131	2,643	97	148
1948	142	2,822	106	151
1949	157	3,076	114	163
1950	172	3,270	121	179
1951	186	3,440	127	194
1952	* 196			
1953	* 222			

* Figures marked thus are Alberta Power Commission figures, the others are from the Dominion Bureau of Statistics.

Increase during the 10 year period ending 1951

Year	Alberta	Canada	Saskatchewan	Manitoba
1951	186	3,440	127	194
1942	98	2,125	73	113
Increase:	88	1,315	54	81
Percent Increase:	90%	62%	74%	72%

TABLE NO. 6

Number of farms served by Central Electric Stations as at December 31 each year.

Year	Alberta	Canada	Saskatchewan	Manitoba
1944	1,244	116,609	293	1,070
1945	1,620	130,078	417	1,236
1946	1,391	148,272	486	2,311
1947	2,275	169,518	739	3,496
1948	3,393	213,205	1,227	5,694
1949	5,017	250,866	2,299	11,155
1950	11,032 *	303,727	4,057	16,964
1951	13,479 *	336,345	6,278 *	25,324 *
1952	18,055 *		10,000 *	33,000 *
1953	**24,181**		15,000 *	39,000 *

* Figures marked thus are Alberta Power Commission figures, the others are from the Dominion Bureau of Statistics.

TABLE NO. 7

Farm Consumption in K.W.H. per year.

Year	Alberta	Canada	Saskatchewan	Manitoba
1944	1,338	1,260	776	959
1945	1,178	1,359	729	1,119
1946	1,752	1,558	940	1,077
1947	1,690	1,686	900	1,678
1948	1,883	1,711	860	1,940
1949	2,128	1,752	880	2,113
1950	2,250	1,932	880	2,359
1951	2,340 *	2,085	1,266	2,475
1952	2,550 *			
1953	2,783 *			

Figures marked thus are Alberta Power Commission figures, the others are from the Dominion Bureau of Statistics.

TABLE NO. 8

Total Pole Line Mileage

(Includes transmission, distribution and rural lines)

Year	Alberta	Canada	Saskatchewan	Manitoba
1943	4,326	78,063	4,001	4,359
1944	4,534	80,073	4,117	4,534
1945	4,782	83,178	4,252	4,534
1946	5,450	89,231	4,920	5,739
1947	6,271	98,530	4,353	8,262
1948	7,552	113,411	5,009	11,564
1949	10,103	135,329	5,371	16,785
1950	12,108	151,726	5,712	20,472
1951	17,255 *	170,582	9,574	24,439
1952	21,254 *			
1953	26,866 *			

* Figures marked thus are Alberta Power Commission figures, the others are from the Dominion Bureau of Statistics.

The figures in Tables No. 1 to 8 show the rapid growth of the Central Station Industry in Alberta during the past ten years. When these are studied in the light of the comments included with the tables, they enable us to compare it with the rest of Canada. This comparison is one of which the industry in Alberta can be proud.

PRESENT STATUS OF THE INDUSTRY

The statistics for the Central Station Industry for the year 1953 follow. Some of the minor figures are estimates only due to the fact that the report has to be prepared before the various utilities have completed their statistics for the past year. It is not likely, however, that these minor estimates will be in error by more than 1% or 2%, so that the error in the whole will be negligible. Wherever a figure has been estimated it is marked "Est."

Tables 9 to 12 deal with plant capacity, peak load, and K.W.H. generated. They break up the figures to show what was generated by hydro, steam, and internal combustion engines, and also to show the proportions generated by the publicly owned and the privately owned plants. Table No. 12 gives further details of the generating plants and their output. It will be noted that it is divided into five groups, - A, B, C, D and E.

The largest, Group A, contains those power plants which are connected by transmission lines, so that we speak of them as being in the interconnected system. Group A covers most of the Province. As well as including the towns served by the Calgary Power Ltd., and Canadian Utilities Limited, it includes the Cities of Calgary, Red Deer and Medicine Hat, and the towns of Ponoka, Macleod and Cardston. In most cases these places do not generate their own power, but purchase it from the Calgary Power Ltd., and retail it to their inhabitants.

Group B takes in the Peace River country and includes the territory served by Canadian Utilities Limited and Northland Utilities Limited.

Group C includes those towns from Sangudo to Greencourt. The Northland Utilities Limited have a diesel plant at Mayerthorpe, and run lines east and west to serve these other towns.

Under Group D are listed the miscellaneous towns served by Northland Utilities in the area north and west of Edmonton. These towns are all isolated towns with the exception of Athabasca, where, as at the end of 1953, there was a line running from Athabasca to Rochester.

Under Group E we have included the other isolated towns in the Province, such as the Town of Edson, which is served by a municipal plant, and various small towns more or less on the fringes of the Province, such as Entwistle, Empress, Fort McMurray, Hines Creek, Kinuso, etc.

The interconnected system shown as Group A had, in 1953, a combined capacity of 349,400 K.W., and generated 1,315,549,489 K.W.H. It served 209,422 customers. This system accounts for 97% of the generating capacity of the Province, 98% of the K.W.H. generated, and 94% of the number of customers.

TABLE NO. 9

The following Companies or Municipalities provide Central Station Electrical Service in the Province. This table gives preliminary data as to the size of their operations, their loads, and the K. W. H. they generated in 1953.

Privately Owned

Name of Company:	Plant Capacity Dec. 31/53K. W.	Peak Load on Plants during 1953:	K. W. H. Generated Net - 1953:
A. Calgary Power Ltd.	163, 000	157, 800	795, 369, 200
Canadian Utilities Ltd.	30, 195	28, 200	100, 097, 579
Northland Utilities Ltd.	6, 110	4, 235	13, 174, 627
* East Kootenay Power Co. Ltd.	12, 500	11, 300	25, 833, 710
Misc. Plants	2, 388	1, 400	2, 116, 426
A. Total	214, 193		936, 591, 542

Publicly Owned

Name of Municipality:	Plant Capacity Dec. 31/53K. W.	Peak Load on Plants during 1953:	K. W. H. Generated Net - 1953:
B. City of Edmonton	90, 000	78, 000	287, 905, 800
** City of Calgary			
(Victoria Station)		8, 900	903, 000
City of Lethbridge	13, 500	8, 200	32, 610, 100
City of Medicine Hat	43, 400	39, 100	80, 980, 800
Town of Edson	1, 189	450	1, 617, 461
B. Total	148, 089		404, 017, 161
Plus A. Total	214, 193		936, 591, 542
GRAND TOTAL	362, 282		1, 340, 608, 703

* The East Kootenay Power's plant is located at Sentinel some two or three miles inside the Alberta border. While this energy is generated in Alberta, most of it is exported to British Columbia. The amount generated by the East Kootenay plant accounts in a large measure for the discrepancy between the figures of the Dominion Bureau of Statistics and the Alberta Power Commission.

** Operated by Calgary Power Ltd. Dismantled during 1953.

TABLE NO. 10

It is interesting to rearrange the figures of Table No. 9 so as to list them according to whether the Power was generated by hydro, steam, or internal combustion plants.

HYDRO

Name of Company	Plant Capacity Dec. 31/53K. W.	Peak Load on Plants during 1953:	K. W. H. Generated Net - 1953:
Calgary Power Ltd.	163,000	157,800	795,369,200
Northland Utilities Ltd.	666	450	2,959,987
Total Hydro:	163,666		798,329,187

STEAM

Name of Company	Plant Capacity Dec. 31/53K. W.	Peak Load on Plants during 1953:	K. W. H. Generated Net - 1953:
Canadian Utilities Ltd.	27,000	25,500	91,946,879
* East Kootenay Power Co. Ltd.	12,500	11,300	25,833,710
City of Edmonton	90,000	78,000	287,905,800
** City of Calgary		8,900	903,000
City of Lethbridge	13,500	8,200	32,610,100
City of Medicine Hat	43,400	39,100	80,980,800
Total Steam:	186,400		520,180,289

INTERNAL COMBUSTION

Name of Company	Plant Capacity Dec. 31/53K. W.	Peak Load on Plants during 1953:	K. W. H. Generated Net - 1953:
Canadian Utilities Ltd.	3,195	2,700	8,150,700
Northland Utilities Ltd.	5,444	3,785	10,214,640
Town of Edson	1,189	450	1,617,461
Misc. Plants	2,388	1,400	2,116,426
Total Internal Combustion:	12,216		22,099,227
GRAND TOTAL:	362,282		1,340,608,703

* See footnote Table No. 9:

** See footnote Table No. 9:

TABLE NO. 11

The following table may be of interest as showing the relative position of steam, hydro and internal combustion in the Province, and of publicly owned and privately owned plants as at December 31, 1953.

Method of Generation	% of Power Generated	% of Capacity
Hydro	59.5	45.2
Steam	38.8	51.5
Internal Combustion	1.7	3.3
	100	100
Publicly Owned:	30.1	40.9
Privately Owned:	69.9	59.1
	100	100

TABLE NO. 12

SUMMARY OF GENERATING PLANTS IN ALBERTA

As at December 31, 1953

Owner	Hydro		Steam		Internal Combustion	
	K. W. Rating	K. W. H. Generated Net - 1953	K. W. Rating	K. W. H. Generated Net - 1953	K. W. Rating	K. W. H. Generated Net - 1953
A. Within the inter-connected system						
Calgary Power Ltd. (only)	163, 000	795, 369, 200				
Canadian Utilities Ltd.			27, 000	91, 946, 879		
East Kootenay Power Co. Ltd.			12, 500	25, 833, 710		
City of Edmonton			90, 000	287, 905, 800		
City of Calgary				903, 000		
City of Lethbridge			13, 500	32, 610, 100		
City of Medicine Hat			43, 400	80, 980, 800		
TOTAL - GROUP A.	163, 000	795, 369, 200	186, 400	520, 180, 289		
B. Systems within the Peace River country not inter-connected with each other						
Canadian Utilities Ltd.					3, 195	8, 150, 700
Northland Utilities Ltd. (Including High Prairie, McLennan and Manning)					2, 900	7, 315, 501
TOTAL - GROUP B.					6, 095	15, 466, 201
C. Sangudo - Greencourt System						
Northland Utilities Ltd.					480	713, 978
TOTAL - GROUP C.					480	713, 978

TABLE NO. 12 (continued)
SUMMARY OF GENERATING PLANTS IN ALBERTA
As at December 31, 1953

Owner	Hydro		Steam		Internal Combustion	
	K. W. Rating	K. W. H. Generated Net - 1953	K. W. Rating	K. W. H. Generated Net - 1953	K. W. Rating	K. W. H. Generated Net - 1953
D. Isolated Towns served by Northland Utilities Ltd.						
Athabasca System					840	803, 127
Jasper	666	2, 959, 987			964	853, 510
Wildwood					130	123, 062
Lac La Biche					130	405, 462
TOTAL - GROUP D.	666	2, 959, 987			2, 064	2, 185, 161
E. Other Isolated Towns						
Town of Edson					1, 189	1, 617, 461
Misc. plants including Consort, Entwistle, Empress, Ft. McMurray, Forest Lawn, Valleyview, etc.					2, 388	2, 116, 426
TOTAL - GROUP E.					3, 577	3, 733, 887
TOTAL - ALL GROUPS	163, 666	798, 329, 187	186, 400	520, 180, 289	12, 216	22, 099, 227

	K. W.	K. W. H.
TOTAL HYDRO:	163, 666	798, 329, 187
TOTAL STEAM:	186, 400	520, 180, 289
TOTAL INTERNAL COMBUSTION:	12, 216	22, 099, 227
GRAND TOTAL:	362, 282	1, 340, 608, 703

The following comments deal with the Province as a whole.

K.W.H. Generated. The increase over the previous year for the Province as a whole was 10.5%. Generation by the hydro plants increased only 9.4%, while that of the steam plants increased 20.0%. The hydro plants were operated in the most efficient manner possible, making the best use of all their water. The steam plants of Edmonton and Medicine Hat took up the slack and increased their generation accordingly.

The internal combustion plants increased their output by 19.2%. This, of course, is largely that generated by Northland Utilities Limited and Canadian Utilities Limited in the Peace River country.

Peak Load. This increased 15%. In ordinary times this would have been thought of as a very large increase. Under present conditions it is about what is to be expected. Peak load usually occurs in December, and then only during the last few days before Christmas. It is greatly affected by weather. Extreme cold and blizzardy conditions cause a very large increase in peak load. The weather in December, 1953, was unusually mild, but so was December, 1952. Since the weather in December of both years was approximately the same, this increase of 15% in peak load may be considered a fair indication of how the load in the Province is growing. If, however, December, 1953, had been stormy the peak load would probably have been another 6,000 K.W. above what it was. The following figures show our estimate of the actual

coincident peak for the Province.

TABLE NO. 13

System	Estimated Peak Load K. W. 1953
Interconnected system, less East Kootenay Power Co. Ltd.	292,800
East Kootenay Power Co. Ltd.	11,300
Canadian Utilities Limited (Grande Prairie)	2,700
Northland Utilities Limited	4,235
Edson	400
Miscellaneous plants	1,420
	312,855

The figures for generation in Tables No. 9 to 13 are those for the Central Station Industry only. These are the figures usually quoted in the Canada Year Book, and by other organizations gathering statistics.

In addition to these, of course, much electricity is generated by various industries for their own use. It is hard to know where to draw the line as to how small an industry should be included when gathering statistics of this energy generated. In Table No. 14, we have collected this information under the headings of mines, Provincial Government plants and other industries.

TABLE NO. 14

Industries Generating all or part of their own power

	Plant Capacity K.W.	K.W.H. Generated
Mines	4,385	10,964,170
Other Industries	13,500	24,000,000
Provincial Government Plants	2,790	6,112,240
	20,675	41,076,410

The large new industries in Clover Bar which generated all or part of their requirements have only been in operation a part of the year. The electricity they have generated, however, accounts for the large increase in the above figures over those for the previous year.

Transmission lines in the Province increased by 2,159 miles to a total of 7,981, which includes 2,920 miles of Company-owned farm lines. Distribution line mileage increased by 127 miles to 2,641. The total mileage of all farm lines increased by 5,443 miles, so that the total farm mileage at the end of 1953 was 19,164. The total mileage of all power lines in the Province at the end of December, 1953, was 26,866.

TABLE NO. 15

Total Circuit Miles of Transmission Lines in the Province by Regional Groups as at December 31, 1953.
This includes Company Owned Farm Lines, but does not include the Co-operative owned farm lines.

		VOLTAGE								
		2,300 to 4,600 V	6,900 to 12,000 V	13,800 V	22,000 V	33,000 V	50,000 V	66,000 V	132,000 V	Total
A.	Within the Interconntected System									
	Calgary Power Ltd.		1,133	49	2,715	57	107	624	818	5,503
	Canadian Utilities Ltd.	58	369	18	916	316		255		1,932
	City of Medicine Hat			28						28
	East Kootenay Power Co. Ltd.	6	26					48		80
	Total - Group A.	64	1,528	95	3,631	373	107	927	818	7,543
B.	Systems within the Peace River Country									
	Canadian Utilities Ltd.	6	21	71	70					168
	Northland Utilities Ltd.	23	45		102					170
	Total - Group B.	29	66	71	172					338
C.	Sangudo-Greencourt System									
	Northland Utilities Ltd.		22							22
	Total - Group C.		22							22
D.	Isolated Towns of Northland Utilities Ltd.									
	Jasper			17						17
	Athabasca - Colinton		8		40					48
	Wildwood		2							2
	Lac La Biche		5							5
	Slave Lake Utilities	6								6
	Total - Group D.	6	15	17	40					78
	TOTAL - ALL GROUPS	99	1,631	183	3,843	373	107	927	818	7,981

TABLE NO. 16

SUMMARY OF DISTRIBUTION SYSTEMS IN ALBERTA
As at December 31st, 1953

		Total Number of Customers Served (Includes Rurals)	K. W. H. Sold (Less Sales to other Co. s) (Includes Rurals)	Circuit Miles of Line (Excludes Rurals)
A.	Within the Interconnected System			
	Calgary Power Ltd.	59, 715	510, 983, 400	675
	Canadian Utilities Limited	25, 346	62, 526, 387	343
	* East Kootenay Power Co. Ltd.	1, 180	11, 604, 500	21
	City of Edmonton	55, 455	222, 526, 895	506
	City of Calgary	49, 000 (Est.)	235, 000, 000 (Est.)	540 (Est.)
	City of Lethbridge	7, 900 (Est.)	26, 690, 000	96
	City of Medicine Hat	5, 200 (Est.)	33, 000, 000 (Est.)	107
	City of Red Deer	3, 082	9, 030, 100	34
	Town of Cardston	841	2, 545, 612	25
	Town of Ft. McLeod	630 (Est.)	1, 700, 000 (Est.)	12 (Est.)
	Town of Ponoka	1, 073	2, 368, 912	21
	Total - Group A.	209, 422	1, 117, 975, 806	2, 380
B.	Systems Within the Peace River Country not connected with each other.			
	Canadian Utilities Ltd.	3, 494	6, 732, 188	47
	Northland Utilities Ltd., including High Prairie, McLennan and Manning	3, 574	6, 250, 793	108
	Total - Group B.	7, 068	12, 982, 981	155
C.	Sangudo - Greencourt System			
	Northland Utilities Ltd.	519	600, 341	12
	Total - Group C.	519	600, 341	12

TABLE NO. 16 (continued)

SUMMARY OF DISTRIBUTION SYSTEMS IN ALBERTA
As at December 31st, 1953

		Total Number of Customers Served (Includes Rurals)	K.W.H. Sold (Less Sales to other Co.s) (Includes Rurals)	Circuit Miles of Line (Excludes Rurals)
D.	Isolated Towns served by Northland Utilities Ltd.			
	Athabasca System	460	758,851	15
	Jasper	555	3,359,518	20
	Wildwood	114	104,823	5
	Lac La Biche	270	371,862	7
	Total - Group D.	1,399	4,595,054	47
E.	Other Isolated Towns			
	Town of Edson	800	1,450,000	12
	Miscellaneous	3,077	1,900,000	35
	Total - Group E.	3,877	3,350,000	47
	GRAND TOTAL:	222,285	1,139,504,182	2,641

* Includes Towns of Coleman, Frank, Cowley, etc.

TABLE NO. 17

SUMMARY OF RURAL ELECTRIFICATION SYSTEMS IN ALBERTA
As at December 31st, 1953

	Owner	Number Farmers Served	Number of Non-farmers Served	Total Number Customers	Circuit Miles of Line
A.	Calgary Power Ltd.				
	* Experimental Areas and Individual Rurals	3,690	558	4,248	2,293
	R. E. A. s	14,441	2,334	16,775	11,437
	Canadian Utilities Limited				
	* Experimental Areas and Individual Rurals	878	110	988	366
	R. E. A. s	4,014	330	4,344	4,165
	East Kootenay Power Co. Ltd.				
	R. E. A. s & Lundbreck Co-op.	61	44	105	75
	City of Edmonton	98		98	50
	City of Calgary	168		168	85
	City of Red Deer	24		24	10
	Town of Ponoka	7		7	4
	Total - Group A.	23,381	3,376	26,757	18,485
B.	Systems within the Peace River Country not interconnected with each other				
	Canadian Utilities Limited				
	* Experimental Areas and Individual Rurals	75	88	163	32
	R. E. A. s	238	22	260	273
	Northland Utilities Limited				
	* Experimental Areas and Individual Rurals	167	9	176	45
	R. E. A. s	140		140	177
	Total - Group B.	620	119	739	527

TABLE NO. 17 (continued)

SUMMARY OF RURAL ELECTRIFICATION SYSTEMS IN ALBERTA
As at December 31st, 1953

	Owner	Number Farmers Served	Number of Non-farmers Served	Total Number Customers	Circuit Miles of Line
C.	Sangudo-Greencourt System				
	Northland Utilities Ltd.				
	Owned Rurals	21	1	22	21
	R. E. A. s	60		60	60
	Total - Group C.	81	1	82	81
D.	Isolated Towns Served by Northland Utilities Limited				
	Company owned Rurals	31		31	10
	R. E. A. s	59		59	57
	Other Companies	9		9	4
	Total - Group D.	99		99	71
	GRAND TOTAL:	24, 181	3, 496	27, 677	19, 164

* The lines to serve these farms are the property of the Power Companies. This mileage is also included in the table showing transmission lines under the heading of 6, 900 to 12, 000 volt lines.

TABLE NO. 18

DATA RE CENTRAL ELECTRIC STATIONS IN ALBERTA BY REGIONAL GROUPS

As at December 31st, 1953

Plants	Group A	Group B	Group C	Group D	Group E	Total
K. W. Rating	349, 400	6, 095	480	2, 730	3, 577	362, 282
K. W. H. Generated	1, 315, 549, 489	15, 466, 201	713, 978	5, 145, 148	3, 733, 887	1, 340, 608, 703
Transmission Lines						
Miles of Line	7, 543	338	22	78		7, 981
Distribution Lines						
Number of customers served	209, 422	7, 068	519	1, 399	3, 877	222, 285
K. W. H. Sold	1, 117, 975, 806	12, 982, 981	600, 341	4, 595, 054	3, 350, 000	1, 139, 504, 182
Miles of Line	2, 380	155	12	47	47	2, 641
Rural Lines						
*Number of farms served	23, 381	620	81	99		24, 181
*Number of non-farmers served	3, 376	119	1			3, 496
**Miles of farm line	18, 485	527	81	71		19, 164
***Miles of R. E. A. line	15, 677	450	60	57		16, 244

*Included in Number of Customers shown under Distribution Lines.

**Partly included in Number of Miles of Transmission.

***Not included in Miles of Line shown under Distribution or Transmission Lines.

The following is a more detailed summary of the increases in generating capacity, transmission lines, etc., during the year 1953.

Calgary Power Ltd.

(1) Changes in Plant Capacity

During the year, there were no major additions to the generating system. A 30,000 K.W. extension to the City of Medicine Hat steam plant was completed in November. This extension was undertaken in accordance with an arrangement between the City and Calgary Power Ltd., under which 25,000 K.W. of the output of the 30,000 K.W. machine is reserved for the use of Calgary Power Ltd.

Construction for an additional unit of 30,000 H.P. in the existing Ghost plant was carried on during the year and is expected to be completed in June, 1954.

The 22,000 H.P. Bearspaw plant was also under construction during the summer and is to be completed early in 1955. There is a slight possibility that it may be ready to come on the line in December, 1954, but this may be optimistic.

During the year Calgary Power Ltd. made extensive studies in connection with a proposed 60,000 K.W. steam plant at Wabamun. The Commission is of the opinion that this plant will be proceeded with during 1954, although so far the company has not said definitely that it would start construction.

The Calgary Power Ltd. have also been studying the feasibility

Bearspaw Dam Under Construction

of building a plant of about 70,000 H.P. capacity on the Saskatchewan River at the Tershishner site. At the moment their studies indicate that this site is capable of economic development. It is possible that further study will lead to a more elaborate system of power plants in that part of the country than had been thought possible previously. The Saskatchewan River throughout most of its length is not favourable to the development of hydro electric plants but there appears to be an area west of Rocky Mountain House where something might be done. Further studies will be needed before definite conclusions can be reached.

(2) Major Changes in Interchange Agreements

During 1953 no significant changes were introduced in the existing interchange agreements, except for the fact that the existing arrangement with the City of Edmonton was extended to September 30th, 1954.

(3) Additional Transmission Lines

The Calgary to Medicine Hat transmission line is in operation at 138,000 volts interconnecting the 30,000 K.W. Medicine Hat steam plant extension by a firm tie to the Calgary Power Ltd. system.

A new substation 138/69 K.V. has been established at Brooks in the Calgary-Medicine Hat line. This provides a new source of power for the Town of Brooks and for the area surrounding, that is, Taber, the Lethbridge area, and services from Gleichen to Tilley.

A new 69/23 K.V. substation at Fort Saskatchewan is nearing completion to supply the Sherritt-Gordon Refinery. This substation also

provides alternate service to 23 K. V. lines in the area. The substation is to be supplied over two 69 K. V. transmission lines from the East Edmonton Substation.

A high voltage switching station has been constructed at Red Deer in one of the two 132 K. V. lines between the Ghost Plant and the East Edmonton substation. This switching, besides providing more capacity under emergent conditions, also improves continuity of supply to the Red Deer, Wetaskiwin and Edmonton substations and the feeders emanating from these points. Transformer capacity at the Red Deer substation has been doubled.

A new 138/69 K. V. substation is in service at Wetaskiwin. This substation firms up the power supply for the towns, etc., on the main line between Edmonton and Red Deer and in the Camrose, Joseph Lake, Hardisty and Wainwright areas. This substation provides ample power at 69 K. V. and 23 K. V. for existing and future domestic and industrial loads.

Transformer capacities were increased and step voltage regulators installed at the following 69/23 K. V. substation: - Macleod, Devon, Redwater, Airdrie, Rockyford and Calder.

In the City of Calgary, a new 10,000 K. V. A. 69/13.2 K. V. substation was established in the south-west area. Additional capacity of an 18,750 K. V. A. 132/13.2 K. V. transformer has been added to the West Calgary Substation. A new 69 K. V. substation at Nose Creek is planned.

At the Horseshoe substation, switching has been provided for a second tie line between the Horseshoe and Ghost substations at 138 K. V.

Companion addition of switching has been made at Ghost. Improvement to the Kanelk line operation by the extension of the line of the Horseshoe substation and switching at Horseshoe is almost complete.

(4) Villages and Hamlets added to Calgary Power Ltd. system during 1953.

Villages

- Alberta Beach
- Caroline
- Foremost
- Kapasiwin Beach
- Ma-Me-O Beach

Hamlets

- Alcomdale
- Bearspaw Sub-Div.
- Breton
- Busby
- Canmore Sub-Div.
- Carvel
- Duffield
- Enchant
- Falun
- Greenshields
- Haight
- Harvie Heights
- Highvale
- Jarvis Bay Sub-Div.
- Jefferson
- Judson
- Keephills
- Leedale
- Lethbridge Sub-Div.
- West Lethbridge Sub-Div.
- Linaria
- Looma
- Mearns
- Northeys Point Sub-Div.
- Partridge Hill
- Riviere-Qui-Barre
- Rossington
- Skiff
- Sunnybrook
- Wabamun
- Warburg
- West Jasper Place Sub-Div.
- Westerose
- Whisky Gap
- Woolford
- Wrentham

(5) New Business

During the year 1953 that Company received applications for an additional 250 oil well pumping services as well as for additional battery pumping services which brings the total number of oil well pumping services applied

for to some 1,750 wells and the number of battery pumps to some 100. They have extended their service to over 300 new oil wells this year. Service is now being provided for oil well pumping, etc., in the Acheson-Stony Plain, Barons, Armena-Camrose, Bon Accord, Campbell, Chauvin, Ellerslie, Excelsior, Golden Spike, Joseph Lake, Leduc, Redwater and Turner Valley Fields.

In addition to the above, service has been provided for additional pipe line pumping, radio systems, repressuring stations, repair depots, water pumps and many other operations in the various phases of the oil industry.

Service has also been provided during the year for desulphurizing plants, masonry products, metals and plastics manufacturing sulphur production, nickle reduction and productions of chemicals.

Canadian Utilities Limited.

(1) Changes in Plant Capacity

A new diesel unit was installed in the Company's Grande Prairie plant. This increased the capacity by 975 K.W.

It is expected that the gas turbine, which will have a capacity of 7,000 K.W. will be installed at the Company's Vermilion plant early in 1954.

(2) Transmission Lines

The Company extended its transmission lines from Oyen to Alsask, Saskatchewan. Another extension was made south to the Village of Acadia Valley.

(3) Towns and Villages added to the Company's system in 1953

Acadia Valley	Rose Lynn
Alsask, Saskatchewan	Scapa
Sibbald	St. Brides
Beaver River	St. Lina
Belloy	Sunnynook

Northland Utilities Limited

(1) Changes in Plant Capacity

Northland Utilities Ltd. made various minor changes in their power plants, the major change being the installation of a 1,000 K.W. unit in their Fairview plant.

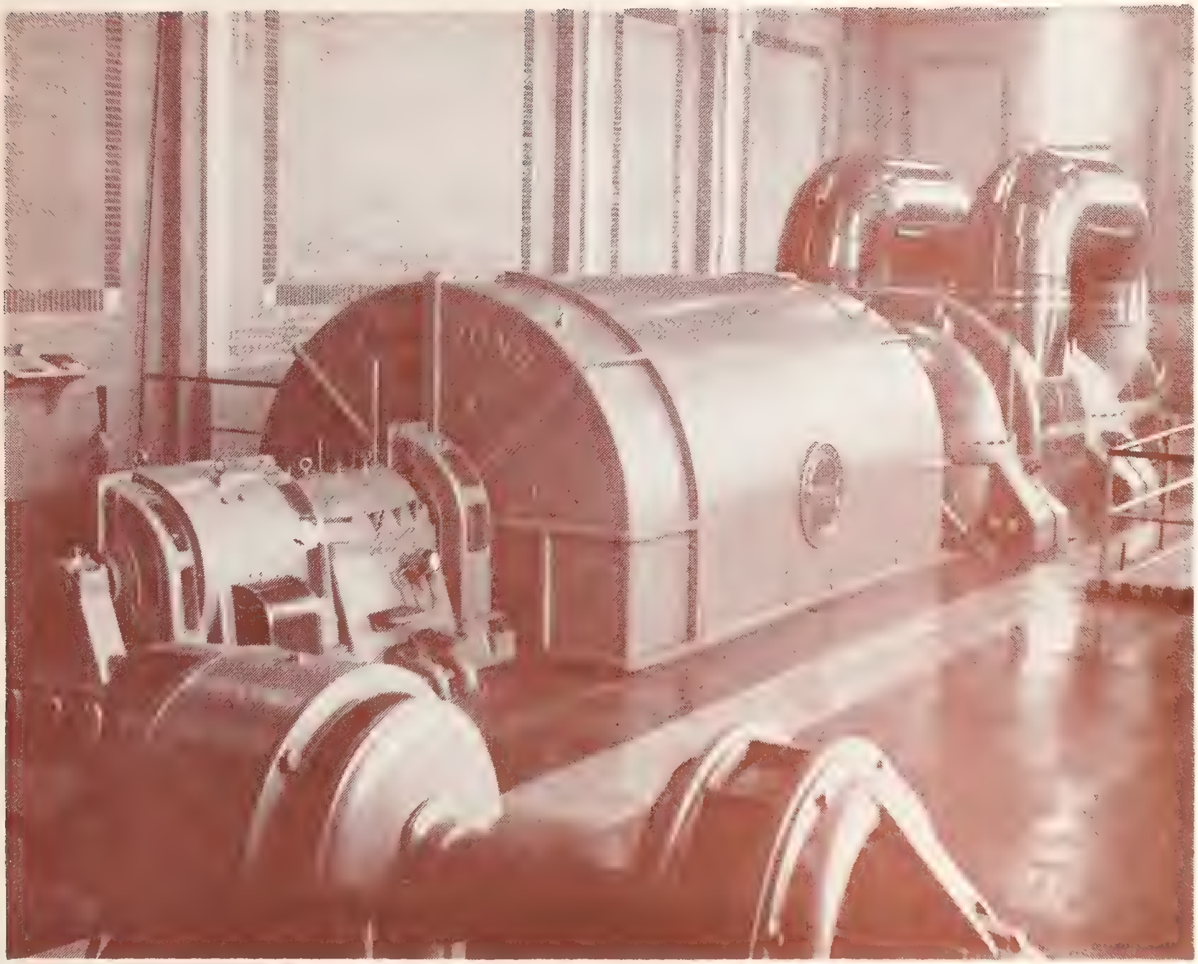
(2) Transmission Lines

The Company extended their line from Meanook to Rochester.

City of Edmonton

(1) Changes in Plant Capacity

The City completed the installation of its latest 30,000 K.W. turbine during the year. This brings the capacity of the City's steam plant to 90,000 K.W. Another 30,000 K.W. unit is on order and is expected to be delivered during 1955. It is anticipated that this will be installed in the City's present plant.



Edmonton's New 30,000 K.W. Steam Turbine

FORECAST TO 1957

Table No. 19 is a study of the growth which we believe will take place in the electrical load of the Province from now until 1957. It shows the actual capacity in K.W. of the power plants in the Province as at December 31st, 1952, the increase in capacity during 1953, and the estimated peak load that occurred in 1953. It then goes on to deal with these year by year until 1957, showing our forecast of peak load and what the companies and municipalities are planning to do to meet that peak load. It will be noted that the estimated peak load for December 31st, 1953, is shown as 324,000, whereas on Table No. 13, this was shown as 312,855. On the same page as Table No. 13, we explained that we thought that the coincident peak load for the Province for the year 1953 was about 6,000 K.W. lower than it might have been if the weather had been cold. Had the weather been cold we should have had a peak load of about 320,000 K.W. The figure of 324,000, which we mentioned above, is taken from the forecast made in the Power Survey of 1952. Since the difference between the two figures is only 4,000 K.W., we have not changed our forecast, and the figures in Table No. 19 are those of the forecast of two years ago.

It will be seen from a study of Table No. 19, that there was ample reserve capacity to meet the load in 1953. The reserve capacity to meet the 1954 load, however, is much smaller. If the Bearspaw plant is finished in 1954, this will change the picture. Even if the Bearspaw plant is not finished there will still be sufficient capacity to meet the load providing no units break down.

anywhere. The Power Commission feels that we should have a greater reserve capacity than this. It feels that at all times we should have at least 30, 000 K. W. of reserve capacity. The maintaining of a reserve of this amount would be quite a costly matter. It is possible that in an emergency the various power plants, by reducing frequency or voltage a little, could tide themselves over such an emergency. Nevertheless, we would be in a sounder position if we had a greater reserve.

When we get on to 1955 the reserve capacity increases again to 30, 000 K. W., which we think is the minimum to which this reserve should be allowed to fall.

In 1956, and in 1957, it appears that we will have ample reserve capacity.

TABLE NO. 19

GENERATING CAPACITY IN K. W.

Not taking account of isolated small plants.

	Capacity added during year	Capacity end of year	Estimated Peak Load
Capacity at Dec. 31, 1952		304,817	
Capacity Added During 1953			
Lethbridge	4,625		
Less Calgary Plant dismantled	-10,000		
Medicine Hat	30,000		
Edmonton	30,000		
Canadian Utilities Ltd.			
Grande Prairie (net addition)	975		
Northland Utilities Ltd.	1,081		
Miscellaneous and Edson	784		
Total Capacity added during 1953	57,465	57,465	
Total Capacity Dec. 31, 1953		362,282	324,000
		say-362,000	
Capacity to be Added During 1954			
Calgary Power Ltd. - Ghost Extension	22,000		
Canadian Utilities Ltd.			
Gas Turbine, Vermilion	7,000		
Canadian Utilities Ltd. -Grande Prairie	1,200		
Northland Utilities Ltd.	2,300		
Total Capacity to be Added During 1954	32,500	32,500	
Total Capacity Dec. 31, 1954		394,500	372,000

TABLE NO. 19 (continued)

GENERATING CAPACITY IN K. W.
Not taking account of isolated small plants

	Capacity added during year	Capacity end of year	Estimated Peak Load
Total Capacity Dec. 31, 1954) Carried Forward -)		394, 500	372, 000
Capacity to be Added During 1955			
Edmonton	30, 000		
Calgary Power Ltd. - Bearspaw	16, 000		
Total Capacity to be Added During 1955	46, 000	46, 000	
Total Capacity Dec. 31, 1955		440, 500	410, 000
Capacity to be Added During 1956			
Calgary Power Ltd. -Wabamun or Saskatchewan River	60, 000		
Canadian Utilities Ltd. -Possible Cold Lake Plant	4, 000		
Canadian Utilities Ltd. -Grande Prairie	1, 800		
Total Capacity to be Added During 1956	65, 800	65, 800	
Total Capacity Dec. 31, 1956		506, 300	450. 000
Capacity to be Added During 1957			
Calgary Power Ltd. -Radnor or Glenbow	42, 000		
Total Capacity to be Added During 1957	42, 000	42, 000	
Total Capacity Dec. 31, 1957		548, 300	495, 000

STUDIES OF WATER POWER SITES

The aerial surveys of the Athabasca River, which were carried on in 1951 and 1952, have been completed. We now have maps giving us 20 foot contours for the whole of the distance from Smith to Ft. McMurray. These maps are on file for future use but it does not appear that any use will be made of them during the next year or so.

Cold Lake. Aerial photographs on the scale of 900 feet to the inch have been obtained over the pertinent area between Primrose Lake, Cold Lake and the Beaver River. This phase of the investigation of this small power project is finished. It remains now to see whether Canadian Utilities Limited will go ahead with the project. They have not completed their studies of it yet, so that we do not know at the moment whether or not this plant will be feasible.

Saskatchewan River. Calgary Power Ltd. have been studying the Saskatchewan River in the area above Rocky Mountain House, and it is thought that it may be possible to build an efficient 70,000 H. P. plant there. The studies, however, are being carried on between that Company and the Department of Water Resources, and no final conclusions are yet available.

It is possible that the Power Commission may take some part in further studies of some of these projects during the year 1954.

FARM ELECTRIFICATION

Farm Electrification made great strides in Alberta again in 1953. During the year 6,126 farmers were supplied with Central Station Power, so that there are now 24,181 getting Central Station Service. At the end of the year approximately 10,700 more farmers were reported to be organized into R.E.A.s and anxious and ready to take service.

We can obtain an idea of the magnitude of the task of farm electrification if we consider the number of poles set by the companies during the past year. They set approximately 55,000 poles during the year. In doing this they followed their usual practice of setting as many poles as they could during the good weather, with the idea that they could string the circuits on these later in the winter. If these 55,000 poles had all been set in one straight line they would extend from Halifax to Vancouver with something over 100 miles extending into the ocean at each end.

The wet weather of the spring and even of the summer made it more difficult than usual for the power companies to build farm lines. The long open fall more than offset this. As a result of some four or five years experience the power companies, particularly Canadian Utilities Limited and Farm Electric Services Ltd., are getting the organization of R.E.A.s and the construction of lines down to a very efficient basis. It is this increase in efficiency that enabled them to energize 6,126 farms in one year.

A goal of a further 5,000 electrified farms has been set for 1954.

This is the maximum economical number of farmers that we can expect to connect in a normal year. It is not so difficult now to get pole line material as it was a year or so ago, but the supply of labour continues to be scarce and expensive. The companies are also faced with the difficulty of training for the construction of rural lines a number of men who leave them in a short time and obtain work in the oil fields.

The following table shows the number of farms connected as of December 31st, 1953, as well as those still under construction. It also shows the number of non-farm customers served off farm lines.

TABLE NO. 20

ALBERTA POWER COMMISSION

Combined Figures for Alberta Farm Electrification
As at December 31, 1953

	No. Farms Connected	Non-Farms	Hamlet Customers	Total Non-Farm Customers	Total Served off Farm Lines
Experimental Areas	2,788	371	385	756	3,544
Completed R.E.A.s	19,081	971	1,769	2,740	21,821
Individual Rurals	2,013				2,013
Farms Supplied by Cities, etc.	299				299
Total Actually Served	24,181	1,342	2,154	3,496	27,677

UNDER CONSTRUCTION *

	No. Farms Under Construction	Non-Farms	Hamlet Customers	Total Non-Farm Customers	Total Served off Farm Lines
New Areas	2,124	42	190	232	2,356
Additions to Old Areas	531				531
Total Under Construction	2,655	42	190	232	2,887

	New Areas	Additions to Old Areas	Total
Number of Farmers in Associations organized or quite definitely requesting service but not yet under construction -	2,699	1,647	4,346
Other Groups or Individuals that are in sight with reasonable certainty for Farm Electrification within 18 months -	2,000	1,500	3,500

* 'Under Construction' includes any farms at any stage of construction from staking to energizing.

This table brings out one other point that is often overlooked; that is, the number of non-farmers, such as filling stations, machine shops and country stores, and the number of customers in hamlets who are getting service off these farm lines, and are able to get service only in virtue of the fact that these farm lines are built. It should be remembered that service to these customers was only possible due to the spread of farm electrification. It should also be borne in mind that, in many cases, the fact that these hamlets were within the area covered by an R. E. A. made the overall cost of joint service low enough to induce the farmers to build their lines. The farmers and the hamlet customers are mutually dependent.

While there are 24, 181 bona fide farmers connected, farm electrification also served 3, 496 non-farm customers, who would not otherwise get service. The total number benefiting by the construction of these farm electrification lines is, therefore, 27, 677.

The figures in the following table show the progress of farm electrification in another way:

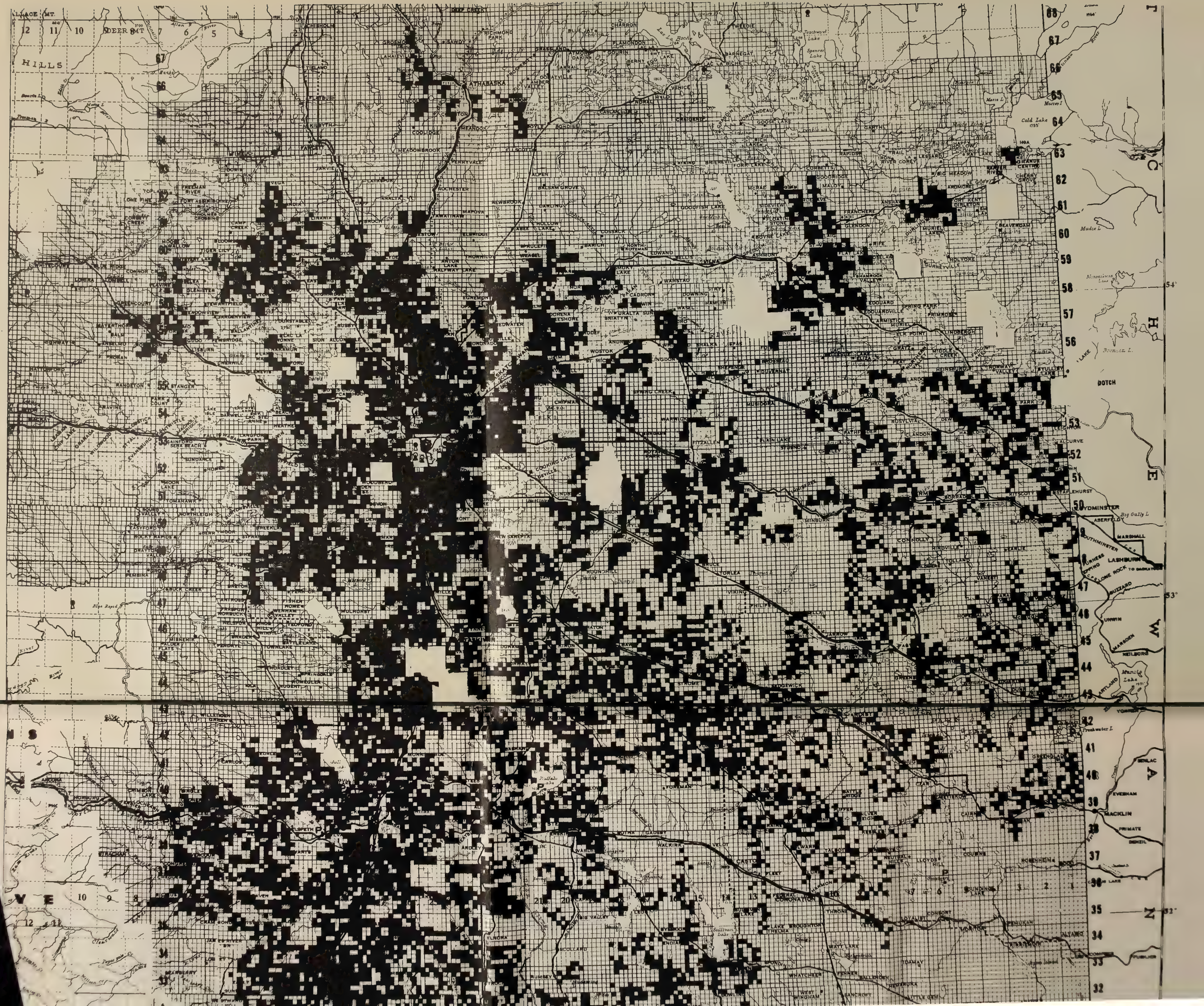
Present State of Farm Electrification

(Includes farmers within approximately 12 miles of existing transmission lines)

Three Companies Only

	Calgary Power Ltd.	Canadian Utilities Limited	Northland Utilities Limited	Total
(a) Total Farms in Province				84, 315

	Calgary Power Ltd.	Canadian Utilities Limited	Northland Utilities Limited	Total
(b) Total Farms within economical distance of lines	45,000	23,000	3,200	72,000
(c) Probable number that will take service (80%)	36,400	18,500	2,500	57,400
(d) Farms served by the three Companies	18,131	5,205	478	23,814
(e) Farms served as a percentage of (c) in each Company's area	50%	28%	19%	41.5%


HILLS
DEER MT
ATHABASKA
RICHMOND PARK
CHARRON
PLAMONDON
LAC LA BICHE
TWEEDIE
BARNEGAT
Touchwood Lake
Spencer Lake
Cold Lake
GRAND CENTRE
CHERRY GROVE
BEAVER RIVER
LE GOFFE
FORT KENT
DIRLETON
MURIEL LAKE
BONNYVILLE
GOODRIDGE
MALOY
FRANCHERE
GLENDON
ST. LINA
FLAT LAKE
SHANROCK VALLEY
ASHMONT
BOYNE LAKE
SIDEVIEW
FLOATING STONE
GOODFISH LAKE
MCRAE
SPEDDEN
MURIEL
ELK POINT
LINDBERGH
PRIMROSE
EDOUARD
EDOUARDVILLE
ARMISTICE
SPRING PARK
HEINSBURG
IRONWAY VALLEY
TULLIBY LAKE
WASKATENAU
WARSPITE
SMOKY LAKE
WASEL
STRY
HAMLIN
DOWNING
CADRONY
WOSTOK
ANDREW
SHEPENGE
MUNDARE
VEGREVILLE
MYRNAM
DEWBERRY
BEAUVALLON
MORECAMBE
RANFURLY
INNISFREE
MINBURN
VERMILION
MANNVILLE
KITSCOTT
MARWAYNE
ISLAY
LLOYDMINSTER
STAPLEHURST
ALCURVE
ABERFELDY
MARSHALL
SOUTHMINSTER
LASHBURN
LONE ROCK
BUZZARD
UNWIN
MARSDEN
NEILBURG
Big Gully L
Manito Lake
HARDISTY
SEDGEWICK
STROME
VIKING
KINSELLA
IRMA
WAINWRIGHT
CHAUVIN
EDGERTON
TOLLAND
VANNESS
ROUND HILL
NEW SAREPTA
TOFIELD
JOSEPHBURG
FORT SASKATCHEWAN
REDWATER
GIBBONS
BON ACCORD
MORINVILLE
LEGAL
ST. ALBERT
EDMONTON
WOODBEND
STONY PLAIN
SPRUCE GROVE
DEVON
LEDUC
WETASKIWIN
CAMROSE
BAWLF
DAYSLAND
KILLAM
FORESTBURG
ALLIANCE
CASTOR
CORONATION
CONSORT
VETERAN
MONITOR
LOYALIST
HAYTER
PROVOST
MACKLIN
EVESHAM
PRIMATE
DENEIL
CAIRNS
CHAUVIN
HUGHENDEN
AMISK
HALKIRK
GADSBY
BOTHA
STETTLER
ERSKINE
ALIX
LACOMBE
PONOKA
CLIVE
NEVIS
BIG VALLEY
ROWLEY
SCOLLARD
RUMSEY
ROCHON SANDS
FENN
DONALDA
BASHAW
FERINTOSH
MORNINGSIDE
RED DEER
ECKVILLE
SYLVAN LAKE
INNISFAIL
PENHOLD
BOWDEN
ELNORA
TROCHU
DELBURNE
MIRROR
SPONDIN
WHITECOURT
MAYERTHORPE
SANGUDO
BARRHEAD
WESTLOCK
FORT ASSINIBOINE
CLYDE
PERRYVALE
COOLIDGE
RADWAY
THORHILD
NEWBROOK
ELK POINT
ENTWISTLE
EVANSBURG
WILDWOOD
DUFFIELD
RIMBEY
WINFIELD
BRETON
DRAYTON VALLEY
ALDER FLATS
CARLOS
STRACHAN
ROCKY MOUNTAIN HOUSE
Sullivan Lake
Buffalo Lake
Pigeon Lake
Wabamun Lake
Lac Ste. Anne
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Bronson L
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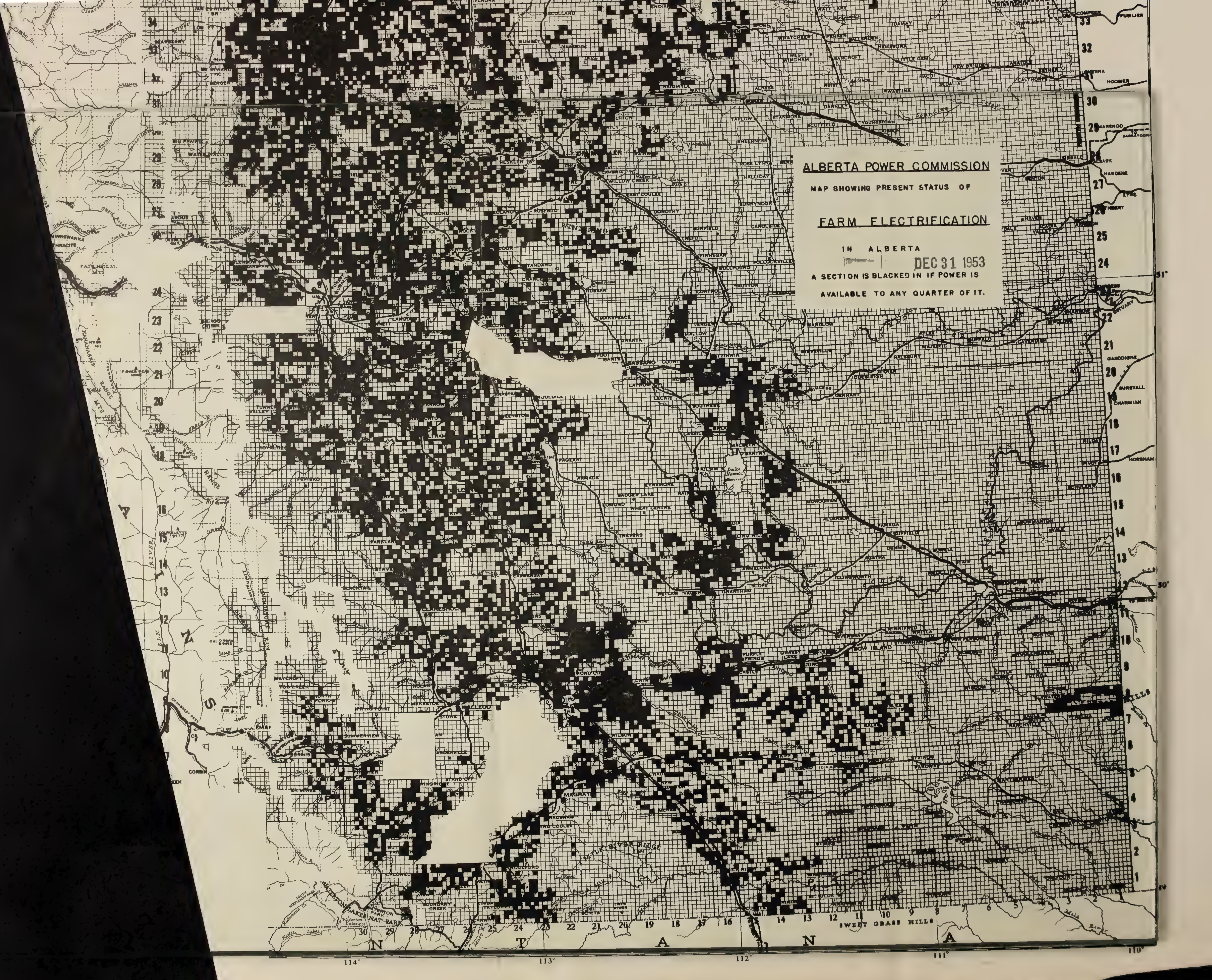


ALBERTA POWER COMMISSION

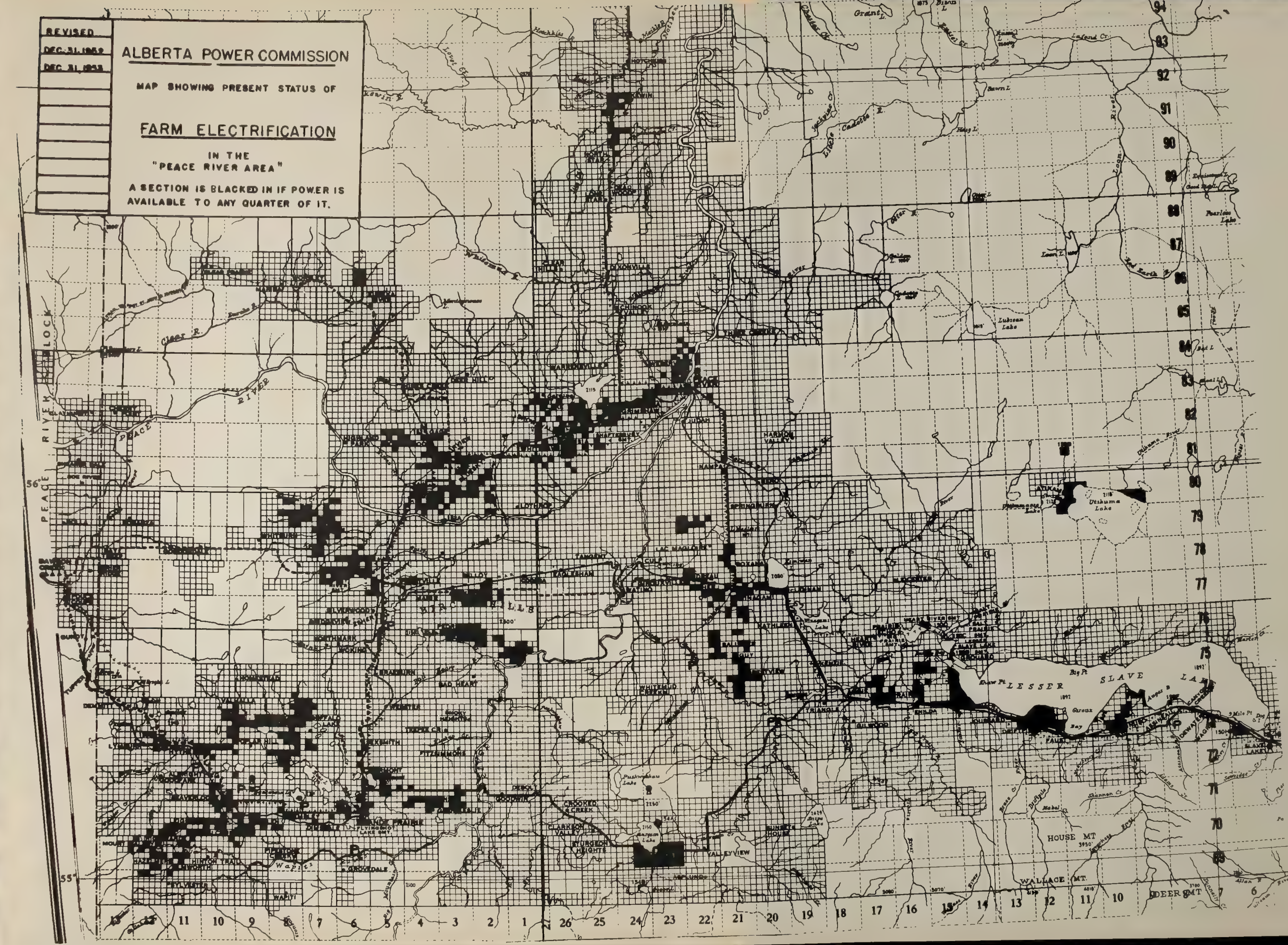
MAP SHOWING PRESENT STATUS OF

FARM ELECTRIFICATION

IN ALBERTA

DEC 31 1953

A SECTION IS BLACKED IN IF POWER IS AVAILABLE TO ANY QUARTER OF IT.



REVISED
DEC. 31, 1952
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ALBERTA POWER COMMISSION

MAP SHOWING PRESENT STATUS OF

FARM ELECTRIFICATION

IN THE
"PEACE RIVER AREA"

A SECTION IS BLACKED IN IF POWER IS AVAILABLE TO ANY QUARTER OF IT.

Farm Electrification made fairly good progress in the Northern part of the Province this year. Of the 84,315 farmers in Alberta, 33,000 live north of a line drawn east and west through Edmonton. Of these approximately 3,500 or 10.6% have been connected to Central Station Service. South of this line there are 51,000 farmers and service has been extended to approximately 20,700 of these, or 40%. The number of farmers served in the Peace River country is increasing and this is an encouraging trend. At the end of the year there were 620 farmers served in the Peace River and Grande Prairie areas.

At the end of December, 1953, there were 19,164 miles of farm lines and during the year 5,443 miles were constructed.

FINANCING

At the end of December a total of 300 Rural Electrification Associations had been organized. Over the years these have borrowed ten and three-quarter millions of dollars. At December 31st, 1953, over $2,500,000 of this had been paid back. The investment of all rural lines in the Province was approximately $22,000,000.00.

The new Rural Electrification Revolving Fund Act, which was passed at the last session of the legislature, has been of great assistance to all farmers who were not then connected. By the end of the year the Power Commission had given approval to 150 applications for loans under this Act. While all of this money may not have been borrowed by the end of December, the approvals covered 5,157 farms at an estimated cost of $5,778,485.00. Only 1,308 farmers

availed themselves of the Co-operative Guarantee Act to borrow money totalling $1,087,785.00, and these loans made possible the construction of farm lines estimated to cost $2,965,273.00.

We believe that during 1954, possibly 95% of the farmers seeking farm electrification will avail themselves of the terms of the Revolving Fund Act, so that it is expected that another $5,000,000.00 will be borrowed by the farmers during the coming year. When the Rural Electrification Revolving Fund Act was set up $10,000,000.00 was set aside to be used for farm electrification. It is anticipated that by the end of the construction year on March 31st, 1955, this $10,000,000.00 will be used up and that we should anticipate providing more money in this fund during the 1955 session of the Legislature.

AREA COVERAGE

As the number of Rural Electrification Associations increases more problems arise, particularly those of defining the boundaries of Rural Electrification Associations. During the year we have defined the boundaries of all R.E.A.s constructed. The Power Commission endeavours to see that the principles of area coverage are carried out. By this we mean that when consideration is given to the construction of lines in any area, the whole area should be mapped and all the farmers in that area should be contacted to give them a chance to be included in the original construction. If the principles of area coverage are carried out, not only are the operating costs going to be less in the future, but the first cost of building the lines is going to be a great

deal less.

The Commission has just dealt with one area in the northern part of the Province and figures in connection with it are worth quoting here as an example of what can be done if an area is built all at one time.

In this area 34 farmers applied for service. The cost of the lines to serve them was worked out and came to $1,275.00 per farm. At this point the Power Commission made a survey of the logical area which should be contained within that R. E. A. This logical area was bounded on the west by a lake, on the north by bush and muskegs, on the east by sand hills and on the south by areas already served. Within this logical area it was found that there were 262 possible farm connections. When the cost of the whole area, comprising these 262 farmers, was worked out it turned out to be $825.00 per farm. It is not likely that the whole 262 farmers will take service, but in any event a great many more than the original 34 will be able to go in as one unit, and the costs to everyone concerned will be very greatly reduced.

During the last year the Power Commission has made maps and done a great deal of survey work in various areas in the Province. One tendency which it has to combat is the desire of a small closely knit group of farmers seeking to organize themselves into an R. E. A., so as to get lines built to them at low cost without having any regard for their neighbours beyond them. The Power Commission has taken the stand that all of the logical area should be served at one time and that even if all the farmers in that area do not come in at the beginning, they will at least have been given the opportunity to do so. There is

considerable resistance at times on the part of small farm groups to this policy of the Power Commission. The Power Companies on the whole have done a good job of trying to bring about area coverage. They are now coming more and more to realize the importance of this question of area coverage.

The provisions in the Rural Electrification Revolving Fund Act have made it possible for the Power Commission to go a long way towards bringing about area coverage. We have considered that the Revolving Fund Act was in its interim stage during 1953 and since many areas had been organized on the old basis prior to the passage of this Act, we have not felt it advisable in their case to place too strict an interpretation on the area coverage provisions of the Act. During the coming year we hope to enforce it literally.

SURVEYS

The Commission has made a number of surveys of farming areas during the year. We had hoped that by this time we would have surveyed more areas. The problem, however, is that of balancing the speed with which we do this work with the economies of taking on added staff, or rather of doing without added staff. We are endeavouring to get along with a small staff and believe that in the long run this will be found to be the most economical procedure. During the year 1954 we will have to make surveys of farming areas as the idea of farm electrification spreads to these areas. By the year after that, however, we should have our surveys far enough advanced that we will not be in such a rush with this type of work.

The Commission has just started the experiment of contacting by mail the farmers in the area to be covered by a proposed Rural Electrification Association. An introductory letter is mailed to these farmers together with a questionnaire which we ask them to fill in and return. In this way we hope to be certain that everyone in a logical area is given a chance to get into an R. E. A. before its organization is too far advanced.

This experiment, if it works out, will save a great deal of survey work in the field. If it is successful it will be expanded to other areas in which it is hoped to initiate farm electrification during the year. In this way we hope to be continually surveying areas which are not slated for farm electrification until the following year. Then when the farmers in these areas are properly surveyed, we, in conjunction with the Power Companies, can work out a logical system of lines to serve them.

Let us look at the figures on farm electrification again for a moment. There are 84,000 farmers in the Province. We expect to be able to serve about 67,000 of these before the program of farm electrification can be considered as near completion. At the end of December, 1953, we will be serving over 24,000 of these. We hope to serve an additional 5,000 in each of the years 1954 and 1955. When we have reached 34,000, at the end of 1955, we will then be serving 39% of all the farmers in the Province.

The frame work of farm electrification as it is at the end of 1953, will permit service to be extended to many thousands more farmers within existing R. E. A. s. As well as the farmers within this frame work there

are still many thousand farmers in what we call the fringe areas. New R.E.A.s will have to be organized in these areas and this will mean that in some cases extension of power lines will have to be made to these areas before farm electrification lines can be built.

The problem of making farm electrification available to the farmers in the fringe areas and in the northern areas of the Province is more difficult than it has been in the vast central area. In this central part of the Province the farming areas have all been continuous. The farmers in the fringe areas, however, are on strips of good land which run back from the main area of good land in the form of long bays. These long strips of farming area are in many cases too far away from existing transmission lines to be served except by extensions of main lines. It becomes necessary in cases like this to organize all the farmers in such a strip of land into one or more R.E.A.s., which should be built the same year. In some cases it is necessary to ask the Power Companies concerned to subsidize such an area by building a feeder line, some part of the cost of which has to be borne by the Power Company. It should be borne in mind that the Power Companies arrange for the building of farm distribution lines for the farmers at cost. The Companies also supply power at cost. The Power Companies are therefore not making any money on farm electrification so that they have no profit to justify them in spending money for such feeder lines as we have mentioned. These lines are necessary, nevertheless, if the farmers in the more remote areas are to get power at anything less than prohibitive cost. It may be necessary within the next year or so for

the Power Commission to consider some other form of subsidy for such lines.

The Commission has dealt with several cases of this nature during the year. Extension of service from Westlock, north to Jarvie and Flatbush; from Grande Prairie to Debolt, Crooked Creek and Sturgeon Heights and from Grimshaw to Manning, are cases in point. We believe that in each of these cases we will, with the help of the Power Commission, work out a satisfactory solution.

In some areas of the Province service is still being given to towns and villages from small diesel plants. The Power Commission is looking to the day when the network of transmission lines will reach to these towns. This will provide a cheaper source of supply to the inhabitants of these towns and will also open up new fields for farm electrification.

The whole question of service to fringe areas is one in which the element of time will play a large part. The Power Commission is trying to speed up the time factor and we believe has taken some successful steps in that direction.

CHECKING COSTS

During the year the Commission has checked all the cost statements which the Companies send to R. E. A. s showing the cost of building their lines. In addition to this, three field checks have been made on three separate farm areas. In all cases these costs have been found correct. In addition to this the Power Commission has asked the Provincial Auditor to make an audit of the costs of two of these areas. The auditor's reports also

show that these areas have been constructed at cost. On the whole, then we conclude that the Power Companies are building these areas at cost and that they are building them efficiently.

The Power Commission feels that it is its duty, not only to investigate problems brought to it, but also to investigate any phases of farm electrification which it believes requires study.

The question of the overheads which the Power Companies charge to the R. E. A. s has been given some study. The three main Companies all have different systems of computing this overhead. It appeared to the Commission that this matter should be investigated. This work is not yet complete, but indications point to the fact that, while the three Companies compute their overhead on a different basis, nevertheless they can and do justify all the charges made to this overhead.

It might be advisable here to explain this matter of overhead. There are actually three or four different steps leading up to the energizing of an R. E. A.

1. Before construction can be started the Power Companies do a great deal of work in contacting farmers, in making surveys of the area to be served and in making maps and estimates. In many cases they work out five or six different estimates before arriving at the final layout of lines.

2. They also order the material, often many months in advance and are faced with paying interest on the money which they borrow to finance this material.

3. The Power Companies draw the final plans showing where lines will run

and submit these plans to the various municipalities and other Government bodies to obtain the necessary approvals before these lines can be built.

4. The actual construction of the lines is usually turned over to a contractor.

5. Finally, the areas have to be inspected and gone over fairly carefully before they can be turned on.

Most of the charges under items 1, 2, 3 and 5 are hard to allocate directly to one R. E. A. For this reason it is the practice of the Power Companies to keep track of the money spent on these items during the year and then, at the end of the year to allocate these to the R. E. A. s constructed during the year. This is done by charging them a percentage of the cost of material and labour. This percentage is what we call overhead.

The question of the adequacy, or otherwise, of the charges made at present to the farmers for operating and deposit reserve accounts, is one which should be studied. The whole system of farm electrification in the Province has not been in operation long enough yet to come to very definite conclusions on these matters, but the question is one to be kept in mind, and possibly it should be investigated one or two years from now. In a preliminary study of this question of depreciation and deposit reserve accounts, it appears that the deposit reserve being set aside at present by the different companies is approximately correct. At any rate, in the United States 1.08% of the total cost of the lines is set aside each year for depreciation. This was done after a lengthy

study on the part of the Rural Electrification Authority at Washington, and seems to be a fairly sound conclusion. The deposit reserves being set aside in Alberta are not too different to this. At the moment we are inclined to say that the present manner of setting aside reserves in Alberta should not be altered.

The Rural Electrification Short Courses which have been put on under the Supervision of the Department of Agriculture, appear to be performing a very worthwhile function. During the winter of 1952 and 1953 some seven of these courses were held at different points in the Province. It was thought worthwhile to expand this activity for the winter of 1953-4 and a total of 15 of these courses is being put on this winter.

The annual use of electricity per farmer in the Province in 1953 has been approximately 2,783 K.W.H. It is somewhat difficult to arrive at this figure. It cannot be done by taking the total K.W.H. sold to farmers and dividing it by the number of farms connected at the end of the year. Farmers' meters are read every three months. Those farmers connected after September 30th, will not have their meters read until after December 30th, so that in trying to estimate annual K.W.H. per farmer, the farmers who are connected after September 30th. cannot be counted.

The K.W.H. used per farmer per month is low when the farmer is first connected, but increases rapidly during the first year or so. Since 6,126 farmers were connected in 1953, the consumption of these farmers will be low. This will have the effect of making an average figure for K.W.H. per farm per

year seem lower than it would actually be if all farmers had been connected for a period of, say, three years. When, therefore, we use this figure of 2,783 K.W.H. per farmer per year, we should realize that the average farm that has been connected for three years, will use a great deal more than this.

Nevertheless, when we consider this figure of 2,783 K.W.H. per farmer per year, it is obvious that electricity has become a necessity in farming operations. It becomes all the more obvious that everything possible should be done to see that electricity is provided to at least 80% or 85% of our farmers as soon as possible. Fortunately, it appears that, for many years to come, we are going to be able to hook up farmers at the rate of 5,000 per year.

There is no need to elaborate on the necessity of farm electrification in our present day standard of living. Electricity is a comfort and a convenience which our farmers have a right to expect. For that reason alone we must see that it is made available to every farmer in all the settled areas of the Province. We must carry on our system of extending farm electrification and see that it continues at the rate of about 5,000 more farms electrified each year until somewhere around 67,000 farms are electrified in the Province.

Electricity provides more than comfort and convenience. It is the most useful tool a farmer can have. It is the one tool which, if used correctly, will repay its cost to the farmer many times over. This is not an idle statement - it is a fact. It is a fact, however, that is not yet fully realized by all of our farmers.

The more use farmers make of electricity the more valuable

it becomes to them, and the more they save money by using it. It is possible that we may be starting down into a minor depression. A farmer who is using electricity for lights and radio only is not making use of electricity in an economic sense - it is a luxury for him and not an essential tool. When hard times hit such a farmer he may be tempted to try to cut down his costs and to dispense with the luxury of electricity. If many did this we would be left with farm electrification lines strung all over the country but which would be practically abandoned.

Now electricity is not a luxury. It is an economic necessity in this age. Without it life on the farm is drudgery and undesirable. With it farm life becomes miraculously changed. An electrified farm is an ideal place to live. We must have a strong and contented agriculture. Electricity will be one of the biggest factors in bringing that about. The Commission is of the opinion that it should consider embarking upon a program aimed at demonstrating the value of electricity to farmers.

During 1953 electricity sold to farmers accounted for 3.7% of the total electricity sold in the Province. While farmers only used 3.7% of the K.W.H., they were responsible for 6.7% of the peak load. Even when we get all the farms electrified the percentage of the Province's electrical output used by farmers will not be large. By 1960 it may be 6% of the total output.

The number of farmers connected during 1953 has established a record. There is a splendid feeling of co-operation between the

farmers, the R. E. A. s and the Power Companies. The Power Commission has received the utmost co-operation from the Power Companies. They have always been most helpful and it has been a pleasure to work with them.

Farm electrification, at the moment, is the principle duty of the Power Commission. It is doubtful if there could be any type of work more rewarding than that which, with trials and tribulations it is true, goes into fostering the spread of farm electrification in the Province. Our goal is the electrification of at least 80% of the farmers in the Province. It is the goal which we must reach and one which we will reach.